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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,610	03/15/2004	Gary L. Sugar	COG-2-0979.02.US	1801

24374 7590 08/23/2006

VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
JACKSON, BLANE J	
ART UNIT	**PAPER NUMBER**
2618	

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/800,610	SUGAR ET AL.	
	Examiner	Art Unit	
	Blane J. Jackson	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-5* is/are allowed.

6)☒ Claim(s) *6-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

The amendment to claims 4 and 5 are accepted since they resolve the claim objections filed 28 November 2005.

Response to Arguments

Applicant's arguments, see Remarks, filed 05 June 2006, with respect to claims 1-5 have been fully considered and are persuasive. The rejection of these claims has been removed. However, the applicant's arguments concerning claims 6-10 have been fully considered but they are not persuasive. Claim 6 does not include claim language regarding the frequency shaping constraint as found in claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 6-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Medvedev et al. (US 6,862,271).

As to claim 6, Medvedev teaches a method for wireless communication between a first communication device and a second communication device comprising:

At the first communication device, processing a baseband signal to be transmitted with transmit antenna weights to transmit beamform the corresponding signal via a plurality of antennas to the second communication subject to a constraint such that the power emitted by each of the antennas is the same (column 8, lines 4-12 and column 10, line 43 to column 11, line 19, selection of a beam steering transmission scheme that allocates the total transmit power uniformly to all transmit antennas used for transmitting a single data stream),

At the second communication device, processing a baseband signal to be transmitted with transmit antenna weights to transmit beamform the corresponding signal via a plurality of antennas to the first communication subject to a constraint such that the power emitted by each of the antennas is the same (column 6, line 58 to column 7, line 9 and column 7, line 33 to column 8, line 12, the beam-steering transmission scheme at any transmitter is dependent on the full channel state information such as a full characterization of the phase for the propagation path for each transmit-receive antenna pair).

As to claim 7, Medvedev teaches the method of claim 6 wherein at the first communication device, receiving at the plurality antennas of the first communication device transmitted from the second communication device and deriving the transmit weights used by the first communication device to transmit to the second

communication device based on the received signals and at the second communication device, receiving at the plurality antennas of the second communication device transmitted from the first communication device and deriving the transmit antenna weights used by the first communication device to transmit to the second communication device based on the received signals (column 4, line 61 to column 5, line 9 and column 11, lines 3-19, the singular vector corresponding to an eigenmode is determined and initially identified at the receiver).

As to claim 8, Medvedev teaches the method of claim 7 wherein at the first communication device, the step of deriving the transmit antenna weights comprises computing a conjugate of a receive weight vector derived from signals received at the first communication device from the second communication device and similar methods at the second communication device (column 4, line 1 to column 5, line 23).

As to claim 9 with respect to claim 7, Medvedev teaches the bandwidth of the baseband signal processed by each of the first and second communication devices comprises K plurality of frequency sub-bands and the magnitude of the complex transmit antenna weights associated with each of the plurality of antennas of the respective communication device is such that the power to be output by each antenna is the same and is equal to 1/KN of the total power to be output for all of the K frequency sub-bands where N is the number of antennas of the respective communication device (column 2, lines 13-20 and column 6, lines 42-50: spatial subchannels of a MIMO or

MIMO-OFDM system where for the full CSI transmission scheme one data stream may be transmitted on each of the Ns spatial subchannels or eigenmodes, column 2, lines 32-60, beam-steering scheme which uniformly allocates the total transmit power to all transmit antennas used for transmitting a single data stream but the data stream is transmitted with the proper phases from these transmit antennas to beam steer).

As to claim 10, Medvedev teaches the method of claim 7 wherein the first and second communication device repeating the step of deriving the transmit weights to update the transmit weights for transmitting back to the respective communication device (receiver reports the information to the transmitter in a transmission scheme in a multi-mode MIMO system to provide improved overall performance, column 4, line 44 to column 5, line 22, the MIMO channel is assumed to be a flat-fading channel with scattering in the propagation environment and so requires repeated derivation of the channel state information at the receiver to categorize the MIMO channel and support the beam steering transmission scheme).

Allowable Subject Matter

Claims 1-5 are allowed. The prior art made of record teaches a method for wireless communication between a first communication device and a second communication device comprising a first communication device computes the magnitude of the complex transmit antenna weight vector associate with each antenna is such that the power to be output at each antenna is the same and is equal to the total

power to be output by all of the plurality antennas divided by the number of antennas but does not teach (Medvedev, column 4, lines 44-60) that the sum of the poser at each corresponding frequency across the plurality of transmit signals is equal to a constant.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Friday, 9:00 AM-6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BJJ

8-20-06
LANA LE
PRIMARY EXAMINER